

cone" pines) even though his key states that the cones are "not serotinous". They are not even persistent in subsp. *murrayana*, the only subspecies that extends into Mexico. *Pinus murrayana* has obvious close affinities with *P. banksiana* of boreal North America, but there is no evidence to support the close linkage of *P. contorta* to any of the other Mexican pines. *Pinus flexilis* may or may not occur in Nuevo Leon, but Perry's evidence is unconvincing and his description is inconsistent: height 20–40 m, leaves flexible (p. 43); height 7–15 m, leaves stiff (p. 45). The photograph of the cone resembles *P. strobiformis*, which the author cites from the same area, more than *P. flexilis*. Perry recognizes 12 Mexican species in his Subsection *Cembroides* (piñon pines). Several of these seem to be based on slender evidence. For example, *P. quadrifolia* and *P. juarezensis*, apparently sympatric in the mountains of northern Baja California, are supposed to be distinguished by their needle number: often 4 per fascicle, but commonly 3 or 5 in *P. quadrifolia*, and usually 5, but occasionally 4 in *P. juarezensis*. However, Perry's photographs show more 5-needle fascicles than 4-needle fascicles in both species. Needle number per fascicle is variable within many pine species. My own work with *P. ponderosa* indicates that needle number is often affected by environmental factors and can change from one year's growth to the next on the same branch. Other questionably distinct species, not convincingly supported by Perry's description, include *P. strobiformis*-*P. ayacahuite* var. *brachyptera*, *P. remota*-*P. catarinae*, *P. johannis*-*P. discolor*, *P. cembroides*-*P. lagunae*, *P. leiophylla*-*P. chihuahuana*, *P. arizonica*-*P. durangensis*, *P. hartwigii*-*P. rudis*-*P. donnell-smithii*, *P. pseudostrobus*-*P. estevezii*-*P. oaxacana*, and *P. oocarpa* var. *ochoterenai*-*P. patula* var. *longipedunculata*-*P. tecunumanii*.

Chapters four and five relate the generally sorry condition of pine forests in Mexico and each of the Central American countries with native pines. Here and in most other parts of the book, fire is regarded primarily as a destroyer of pine forests, which it often is, but the role of fire in maintaining pine-dominated ecosystems is not stressed sufficiently. Perry emphasizes that the primary destructive factor in the pine forests is over-exploitation by humans, driven by population pressure. This important point is underscored by colorful, even apocalyptic rhetoric. It is noted that "we" could help the people of Mexico and Central America to save their pines, but nothing specific is suggested. I would have hoped that, with 40 years of experience in the region, Perry might have more to offer. There is also no mention of current conservation efforts within Mexico and Central America. While still far short of sufficient, they should be highlighted and specifically encouraged in a book such as this.

The bibliography that concludes the book includes a good combination of old and recent references, including many from relatively obscure sources. In spite of its shortcomings, I would buy this book and use it with caution. It's full of information and should be a valuable companion in the field.

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Ecosystems of the World 8A. Natural Grasslands. Introduction and Western Hemisphere. Edited by ROBERT T. COUPLAND. Elsevier, New York, NY. xiii + 469 p. Hardcover, \$217. ISBN 0444-88264-2.

This is the first of a two-volume series dealing with grasslands of the world; Volume 8B covers grasslands of Europe, Africa, Asia and Oceania. While Volume 8A concentrates on North America and South America there is much information on climate, soils and general ecological processes.

One chapter relevant to Madrono readers is the "California Prairie" contributed by H. F. Heady et al. This chapter includes some new material not covered in Heady's

contribution to the *Terrestrial Vegetation of California* book (edited by Barbour and Major). The present contribution, however, is an outdated coverage of the subject, finished years before the 1992 publication date. While it represents a useful summary of many important studies performed by UC Davis and UC Berkeley scientists, it includes few other studies. It is noted that, while the authors included more than 20 of their own papers, none of the work performed on Jasper Ridge grasslands in the past two decades is cited; the omission of names such as Gulmon, Mooney, Turitzin, Chiariello, and Hobbs, when discussing California grasslands, is inexcusable. Not only were most all papers dealing with southern California grasslands omitted, but southern California grasslands were omitted from the distribution map. This chapter falls short of being an adequate review of the California Prairie. Not being familiar with literature on other western North American grasslands I can not say whether this problem is true of other chapters in the book. In light of my disappointment with the California grassland chapter, I cannot suggest this volume as an addition to our reader's library.

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ANNOUNCEMENT

Beginning 1 January 1994, all new manuscripts and correspondence concerning previously submitted manuscripts should be addressed to the new editor:

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